

Index theorems from crystallographic bulk-boundary correspondence

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Abstract: In topological matter, bulk topology is usually detected spectrally as zero modes on a boundary. Applied to $1D$ chiral symmetric systems, we recover a classical index theorem for Toeplitz operators. I will explain how such bulk-boundary correspondences should be formulated in the crystallographic setting, and show in a simple example that a new subtle mod 2 index theorem is obtained. As another by-product, we obtain a crystallographic version of T -duality.